

**Certified
Naval Battle Groups**



Naval Collaborative Engineering Environment

**NDIA Systems Engineering Conference
October 21-24 2002**

**Dr. Harry E. Crisp
Director, RDA CHENG Naval CEE**



Outline

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- Naval CEE Purpose
- Naval CEE Elements
- Integrated Database
- Summary



Naval CEE Purpose

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- **To provide an integrated digital environment that:**
 - Enhances the cooperation and exchange of data, information, and knowledge among Naval stakeholders engaged in ----- activities directed toward assuring integrated and interoperable Naval force systems.
 - Enables the integration and interoperability of Naval force systems across the spectrum of the Naval acquisition process.

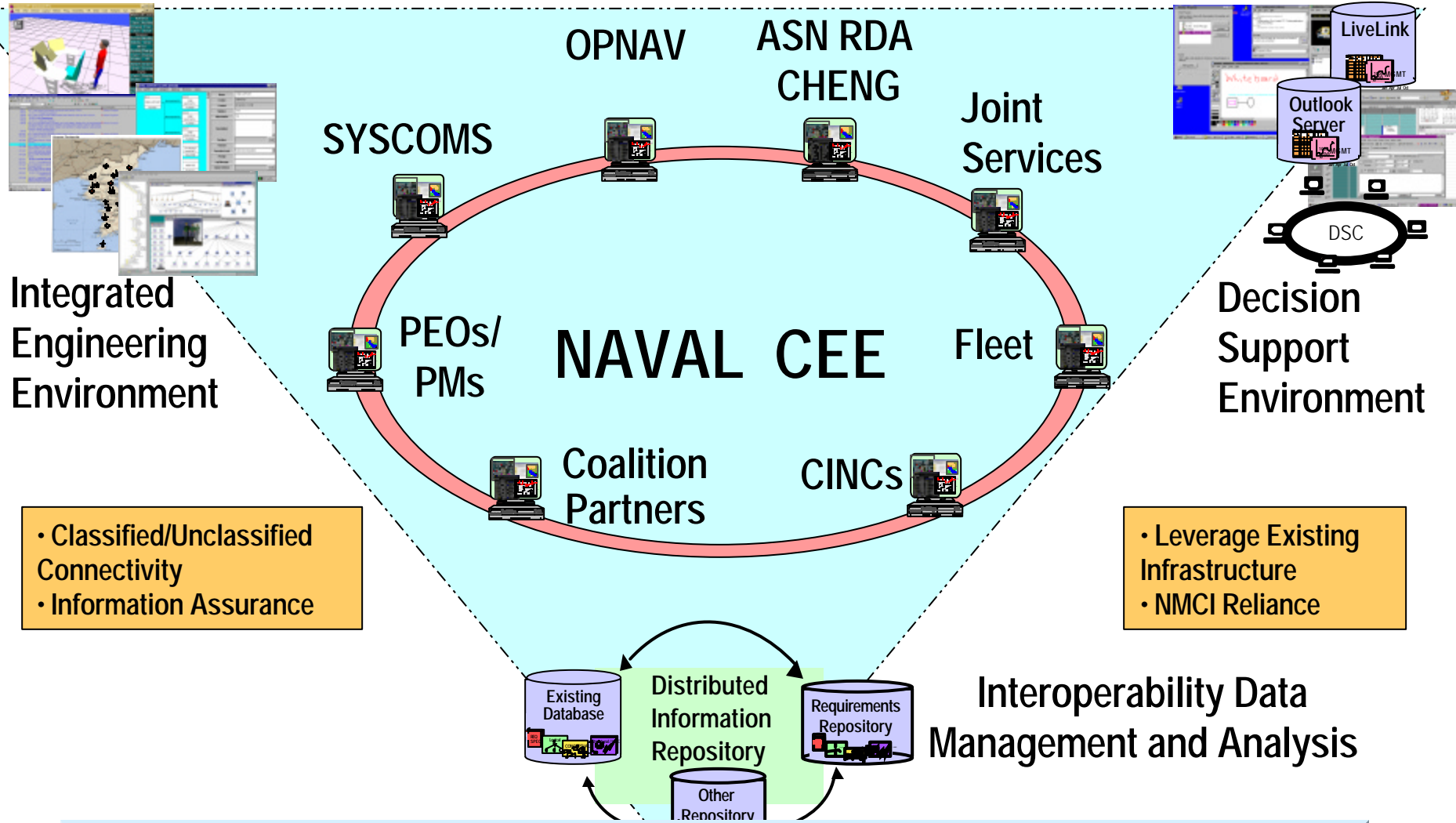
Based on Both E-Business and E-Systems Engineering Capabilities

Naval CEE Terms of Reference, 4 January 2001



Naval Collaborative Engineering Environment

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Classified and Unclassified Connectivity to Enable Stakeholder Collaboration



RDA CHENG Website

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Home - Microsoft Internet Explorer

Address: <https://workspace.asndacheng.navy.mil/http/>

Workspace Home | Document Libraries | Discussion Boards | View all Lists | Create New List | Site Settings | Help

TTCP Workspace Home

Quick Launch

- Contacts
- Links
- Document Discussions
- Task Discussions
- Coalition Integrated
- Air Picture

Documents Throughout RDA CHENG Web Site

[Go to Feedback](#)

[Go to ASN\(RDA\) CHENG Home](#)

[Go to ToolBox](#)

The Technical Cooperation Program Technical Panel 4 Workspace

News Announcements [Add new announcement](#)

TTCP Joint Systems and Analysis Meeting
by Van Horn, LCDR Saly 4/22/2002 4:15 PM
Meeting will include visits to Defence Research and Development Ottawa and Defence R&D Canada facilities. A tour and technical demo are also planned at the Communications Research Centre. A hosted reception dinner is planned for 24 April. Secret-level...

W/E 04/27 TIP: SEARCH DOCUMENTS
by Web Content Manager 2002 7:05 PM
Looking for a specific document or resource? Use the Search Documents tool....
Search a specific Library, a specific Workspace, or search across all Workspaces to which you have access. Use the Search Documents tool....

Calendar Events [Add new event](#)

4/22/2002 9:00 AM	TTCP Joint Systems and Analysis TP-4 Meeting
Meeting will be conducted at various facilities in Ottawa. Secret level clearances are required. Technical Secretary: Mr. Pierre Gauvin (Pierre.Gauvin@drdc-rddc.dnd.ca / 613-996-5717).	
5/27/2002	National Day
5/28/2002	Federal Holiday
10/14/2002 12:00 AM	Columbus Day
11/11/2002 12:00 AM	Veterans' Day
11/28/2002 12:00 AM	Thanksgiving
12/25/2002 12:00 AM	Christmas

Tasks [Add new item](#)

Title

There are no items to show. Click "Add new item" above.

Document Libraries [Go...](#)

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Past Weekly Workspace Tips!

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Collaborate

Keep team members informed

Share information

Keep track of upcoming events

Access data and tools

Monitor status of team action items





RDA CHENG
Naval CEE

The CEDAR
Portal

Home

Apply for
Accounts

Data
Resources

- List of
Resources
- Search
- Graphical
Views
- MetaData

Lexicon

Tools






Help



CEDAR

CEDAR: List of the NCEE Interoperability Data Resources

Select from one of the following Data Resources

NAVSEA Afloat Master Planning System Online	 Afloat Master Planning System Online
NAVAIR Interoperability Data Resources	
MARCOR MAGTF C4I Systems/Technical Architecture and Repository	
SPAWAR Virtual Program Office Information Center	 VPO Information Center
Root Cause Analysis Database	
Master Design Reference Mission	 DRM Article



IDR Overview

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JIST3 NAVY INTEROP - Microsoft Internet Explorer provided by IMD for NAVAIR

File Edit View Favorites Tools Help Address http://jcs.mil/jist3/BOOKMARKS/INTEROP.HTML

Back Forward Stop Refresh Home Search Favorites History Mail Print

JIST3 MENU *It's value your feedback*

NAVY INTEROPERABILITY Functional Systems Operational Outline Search Home

Air Interoperability
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[C4ISP Folder](#)
[Related Docs](#)
[MNS/ORD Matrix](#)
Aircraft Listings
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[GIG Draft](#)

Functional Viewpoint

Operational Viewpoint

Systems Viewpoint

Platform and Systems Relationship

Outline Viewpoint

Select a viewpoint to obtain greater detail

Unknown Zone (Mixed)

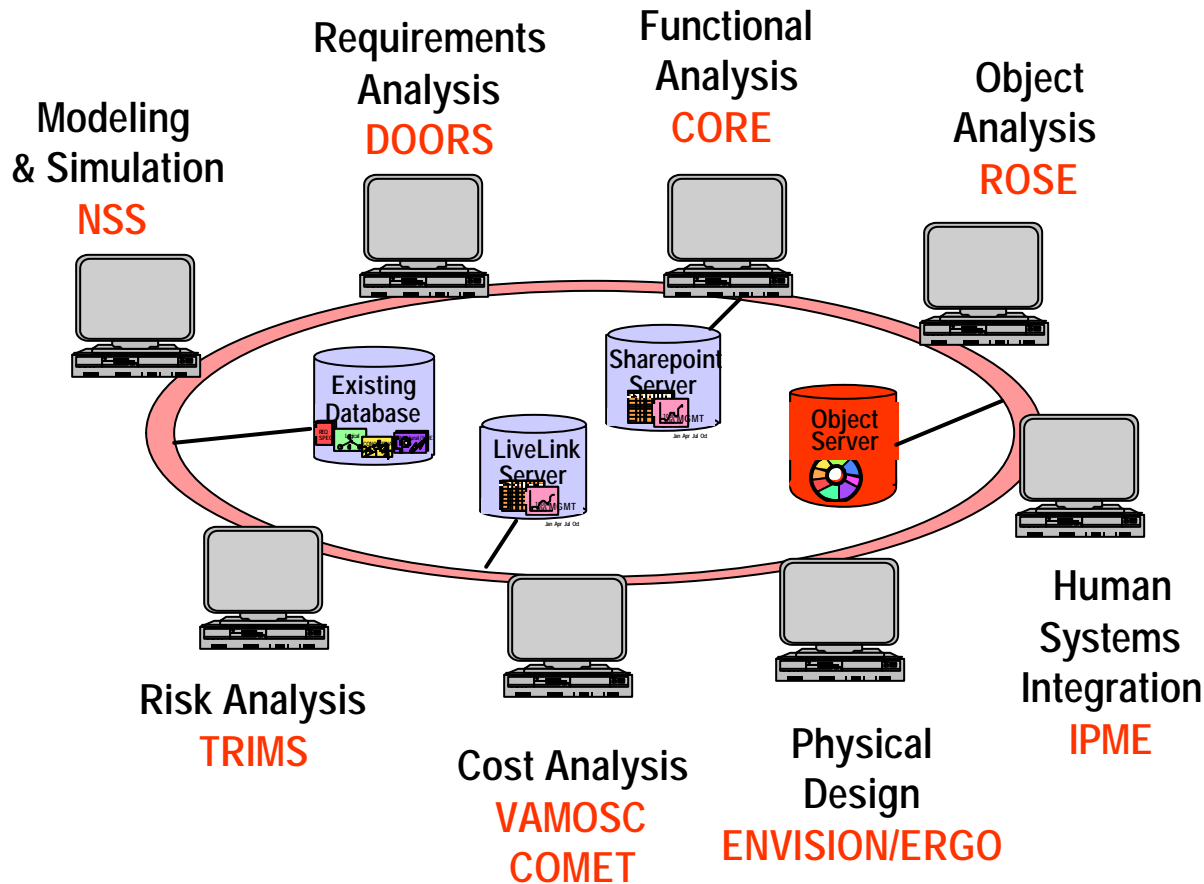
Authorita-
tive Data

Program
Links



Integrated Engineering Environment

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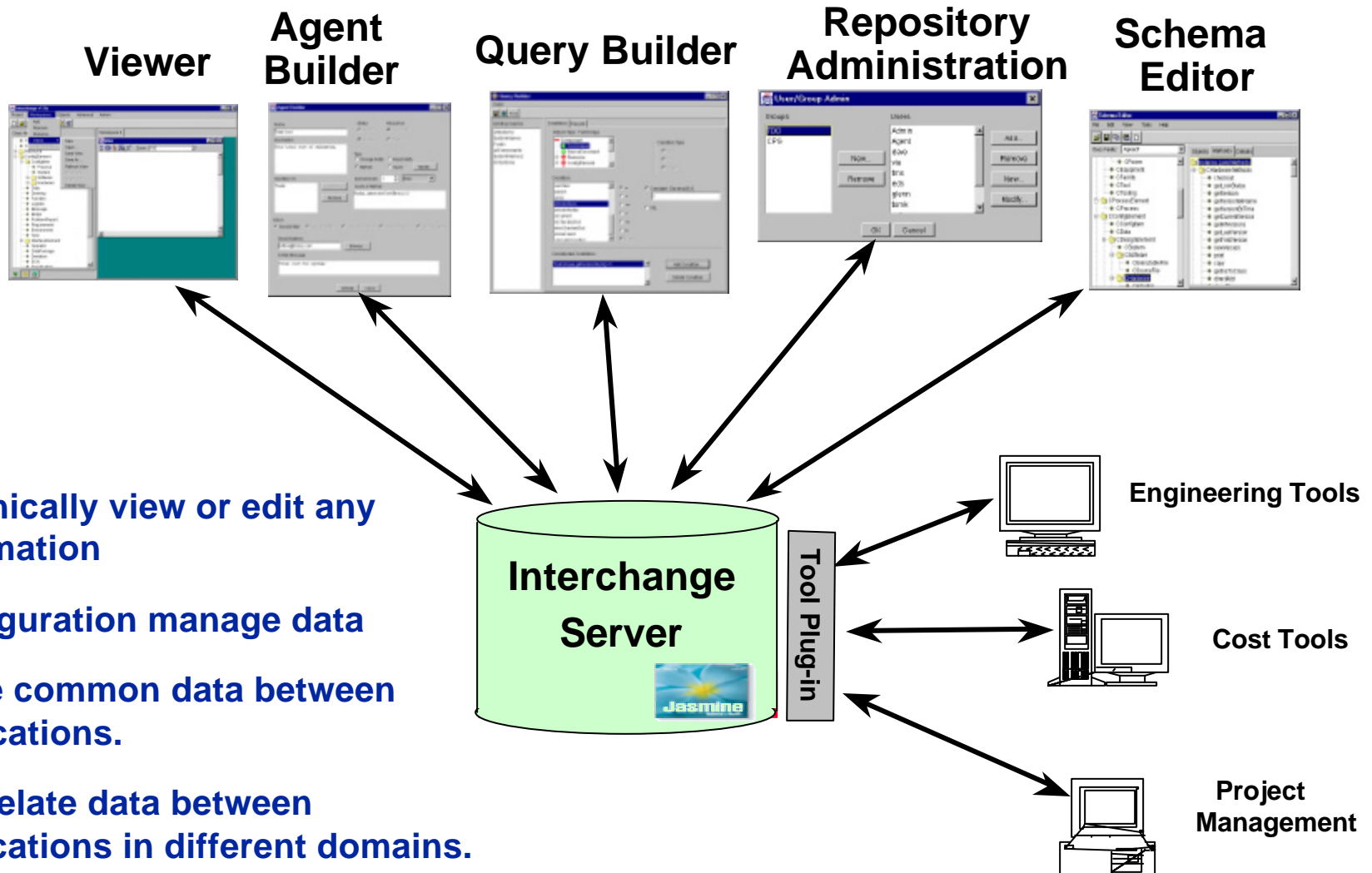


Provides for a Seamless Flow of Information Between Tools



Interchange - System Information Repository

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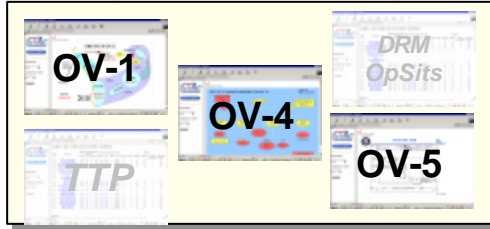




Using Architectures in Systems Engineering

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Operational Concept

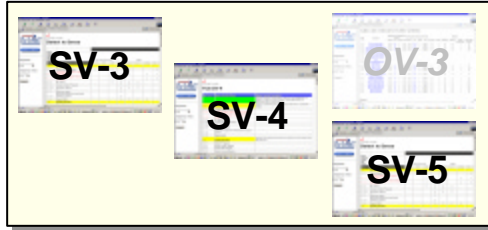


Lesser

The Role of Engineering and Technology

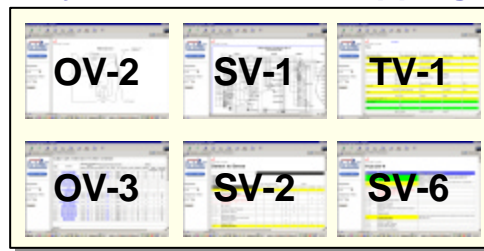
Greater

System Functional Mapping



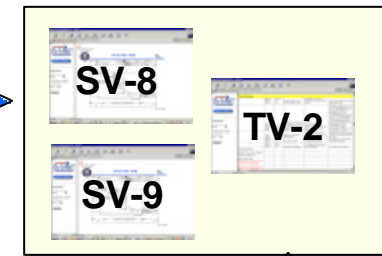
1st Order Analysis:
Functionality--

System Interface Mapping

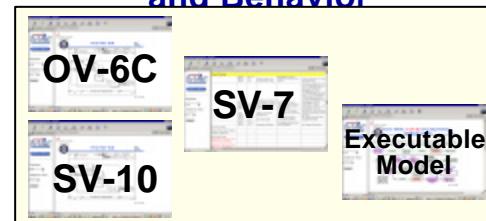


2nd Order Analysis:
Static Interoperability

FoS/SoS Evolution



Architecture Performance and Behavior



3rd Order Analysis:
Dynamic Interoperability

DRM: Design Reference Mission
OpSit: Operational Situation
TTP: Tactics, Techniques, Procedures
FoS: Family of Systems
SoS: System of Systems

Note: There are dependencies between the Architecture products that are not shown in the System Engineering flow. Many of the products are developed concurrently.

**Architectures Provide the Framework for
FoS/SoS Systems Engineering & Acquisition**

- OV-1 High-level Operational Concept Graphic
- OV-2 Operational Node Connectivity Description
- OV-3 Operational Information Exchange Matrix
- OV-4 Command Relationships Chart
- OV-5 Activity Model
- OV-6C Operational Event/Trace Description
- SV-1 System Interface Description
- SV-2 Systems Communication Description
- SV-3 Systems Matrix
- SV-4 System Functionality Description
- SV-5 Operational Activity to System Function Traceability Matrix
- SV-6 System Information Exchange Matrix
- SV-7 System Performance Parameters Matrix
- SV-8 System Evolution Description
- SV-9 System Technology Forecast
- SV-10 System Activity Sequence & Timing
- TV-1 Technical Architecture Profile
- TV-2 Standards Technology Forecast

Rev 4 * 22 Apr 02



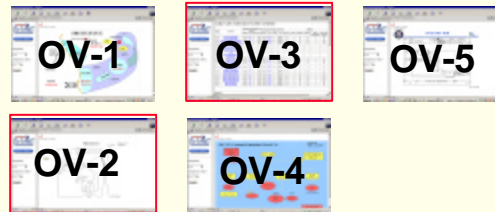
Engineering Model Composition

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Requirements
Analysis
(DOORS, CORE,
Rose)



Operational Model



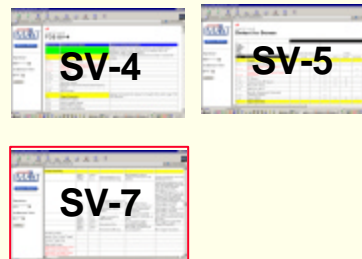
- Requirement Documents
- Activity Timing, Inputs & Outputs
- Activity Resource Utilization
- Execution Logic
- OV-6a, OV-6b, OV-6c, OV-7

Functional
Analysis
(CORE)

Interchange



Functional Model

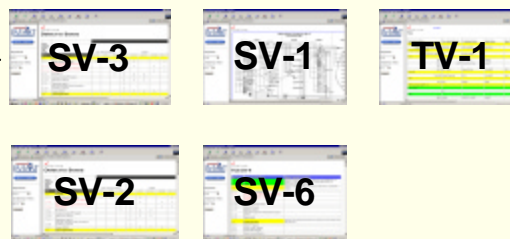


- Control Logic
- Functional Resource Utilization
- Functional Timing & Data Flows
- Conditional Logic (Failure Conditions, Fault Detection)
- SV-10a, SV-10b, SV-10c

Design Synthesis
(CORE, Rose RT,
SA, NSS)



Physical (Design) Model



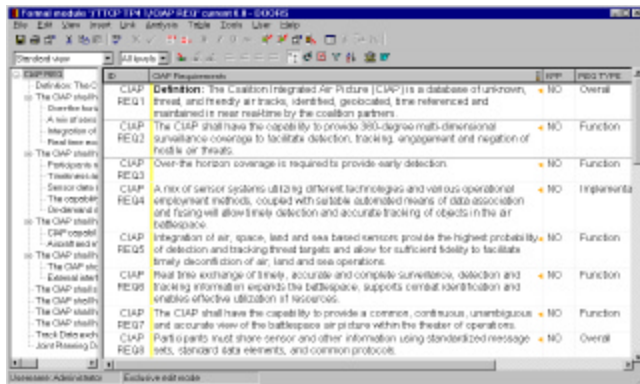
- Interface Design/Control (SV-11)
- Effectiveness Models
- FMECA/RAM Analysis
- Dynamic Reconfiguration
- Ownership Cost Analysis



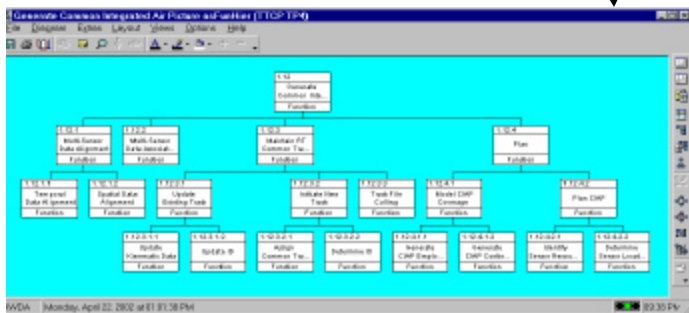
Data Integration Flow

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DOORS

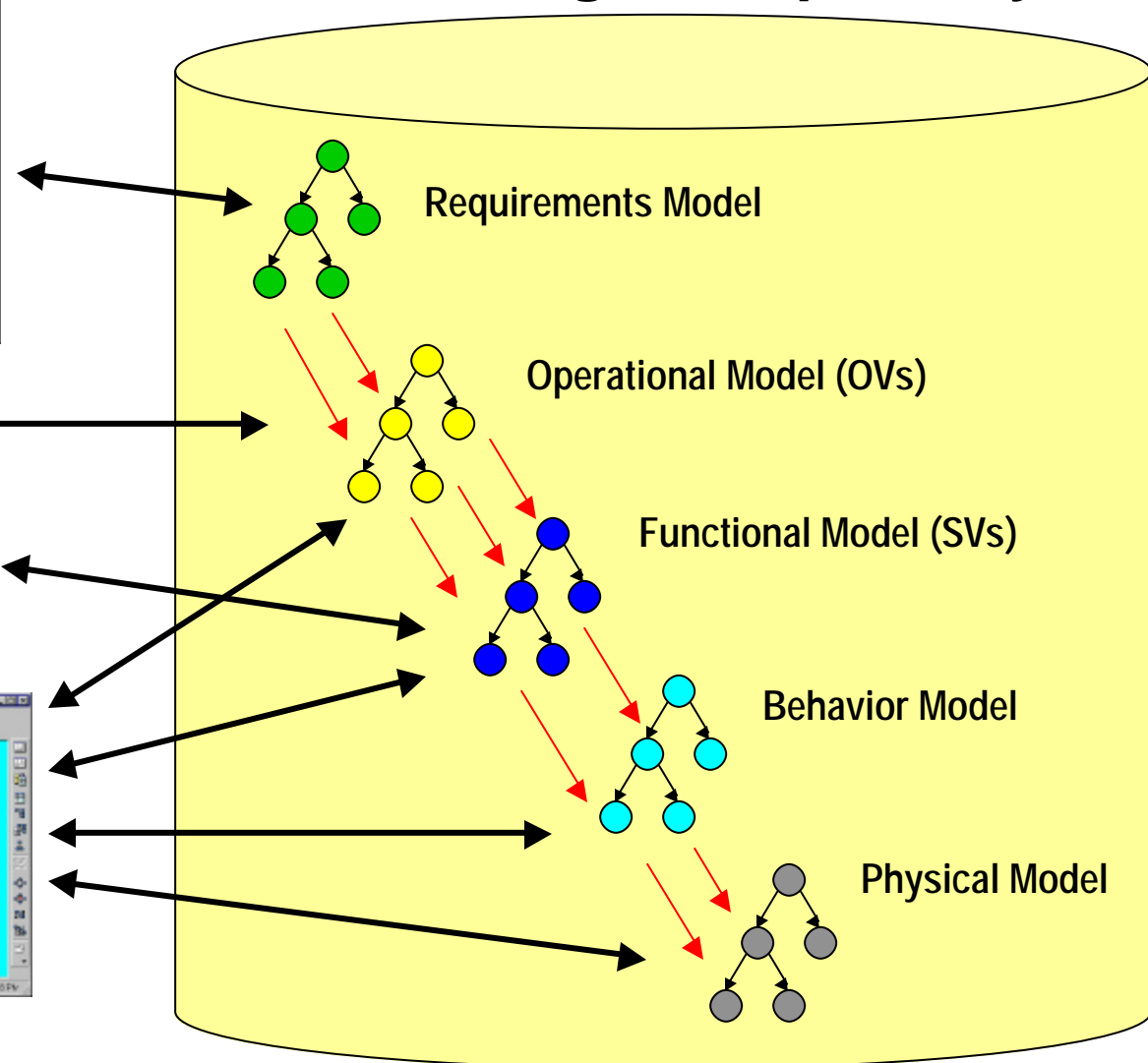


Word,
PowerPoint,
Excel, DIAD, ..



CORE

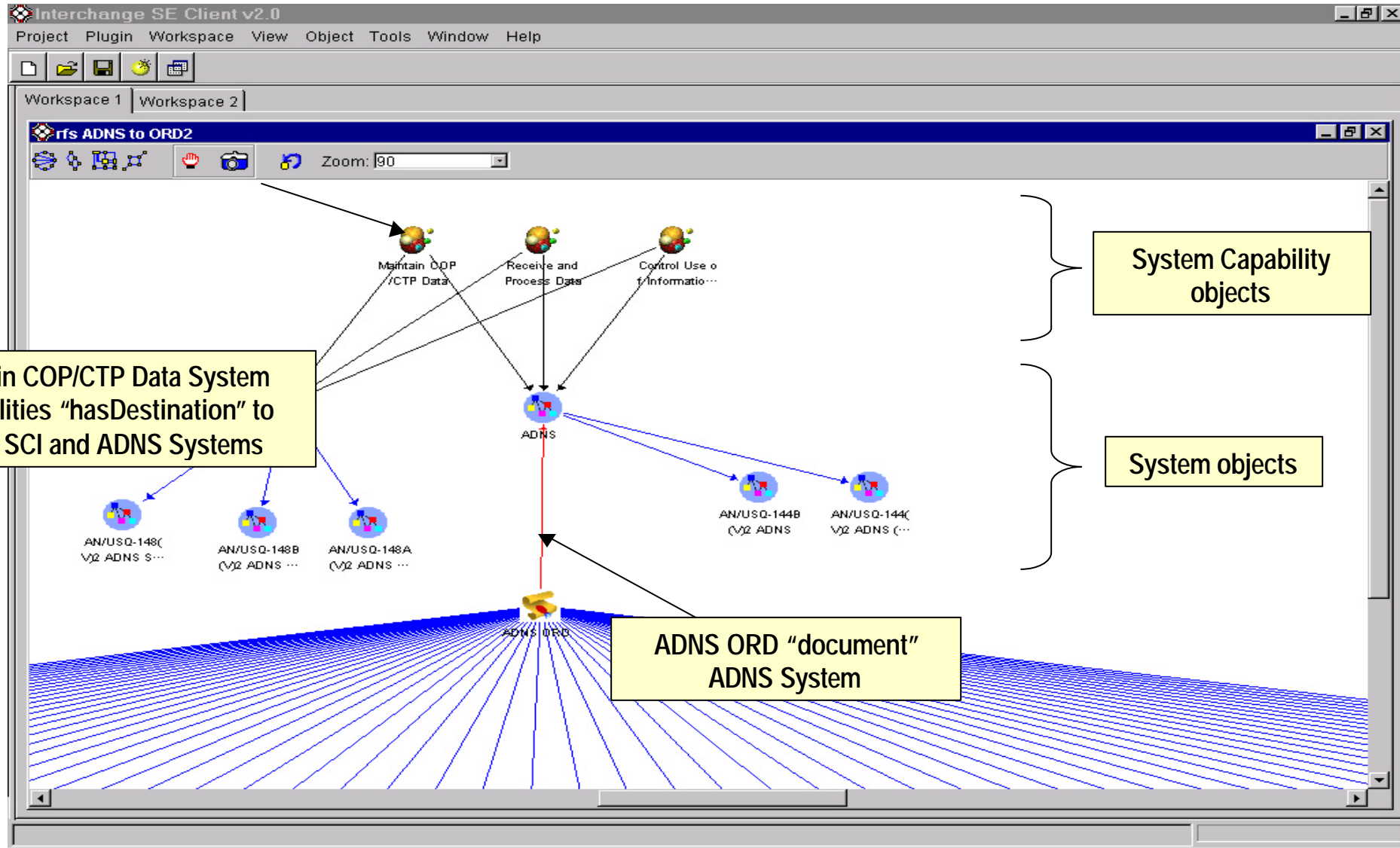
Interchange^{SE} Repository





Requirement Specification to System & System Capabilities Traceability

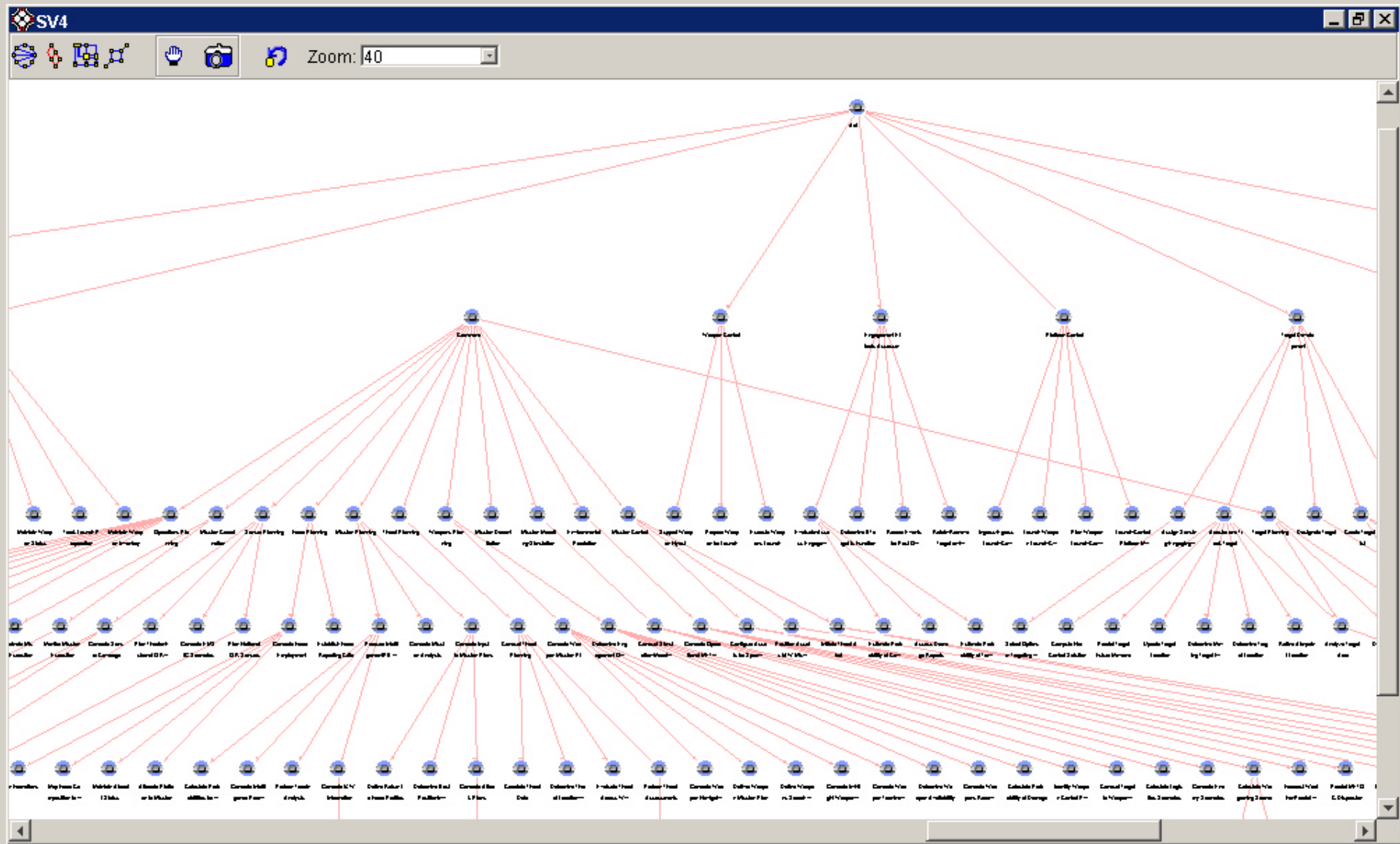
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SV4 - Function Decomposition

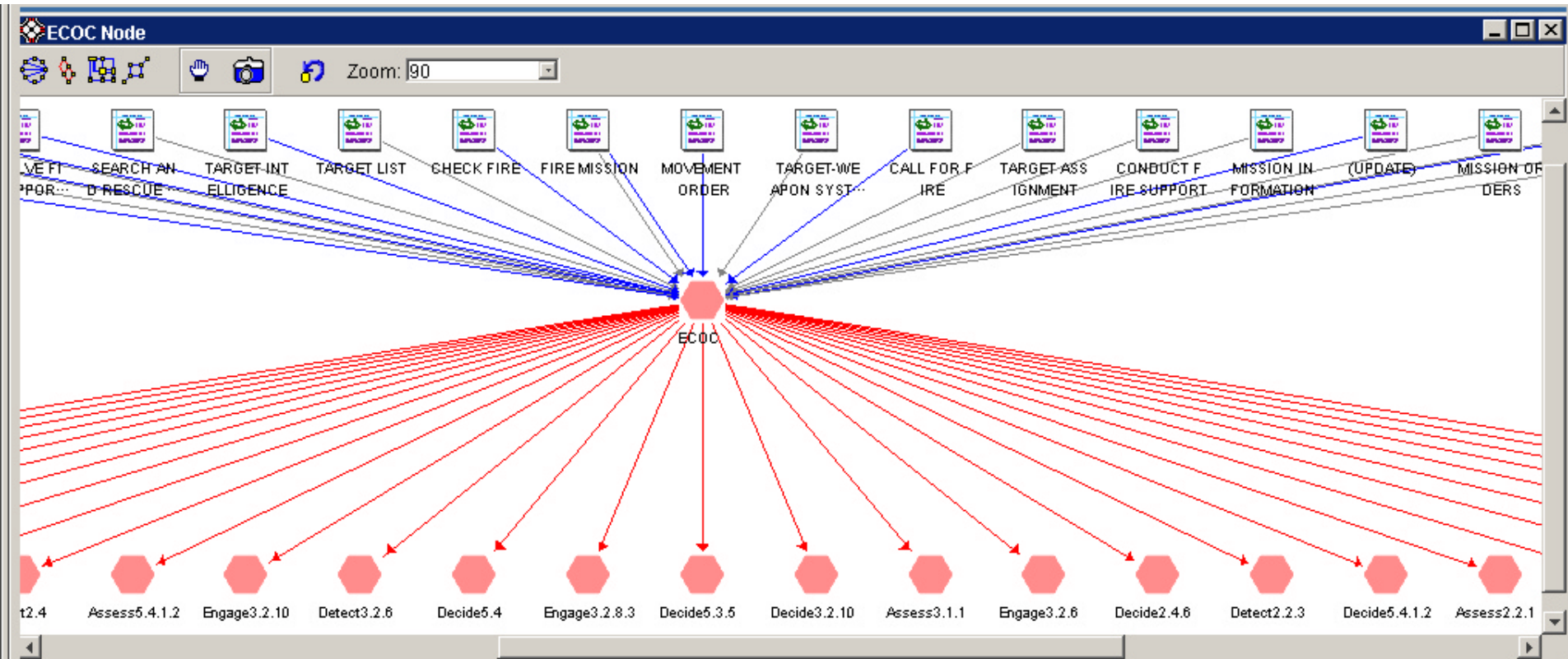
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OV3 - Node-Connectivity & IERs

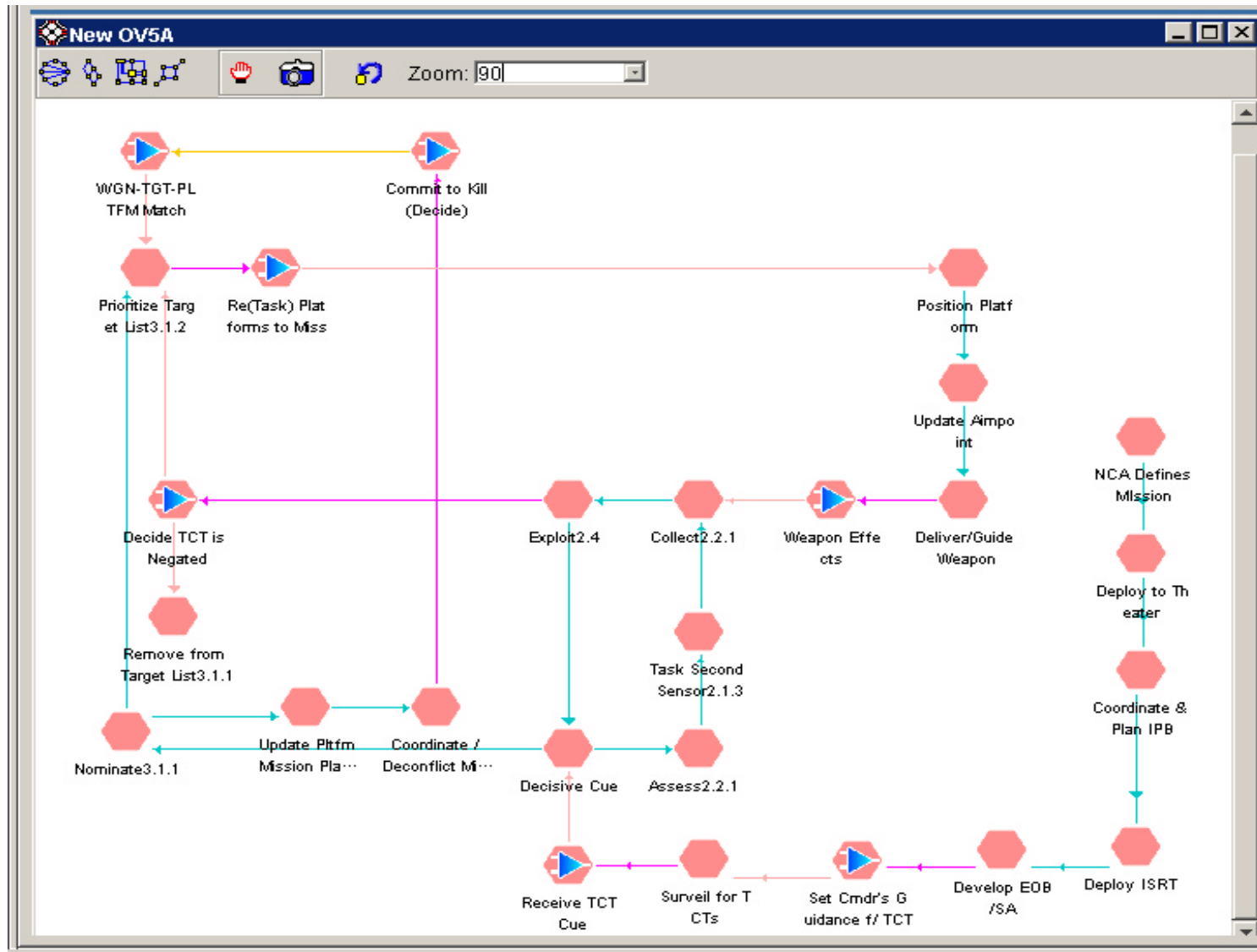
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OV5a – Activity Flow

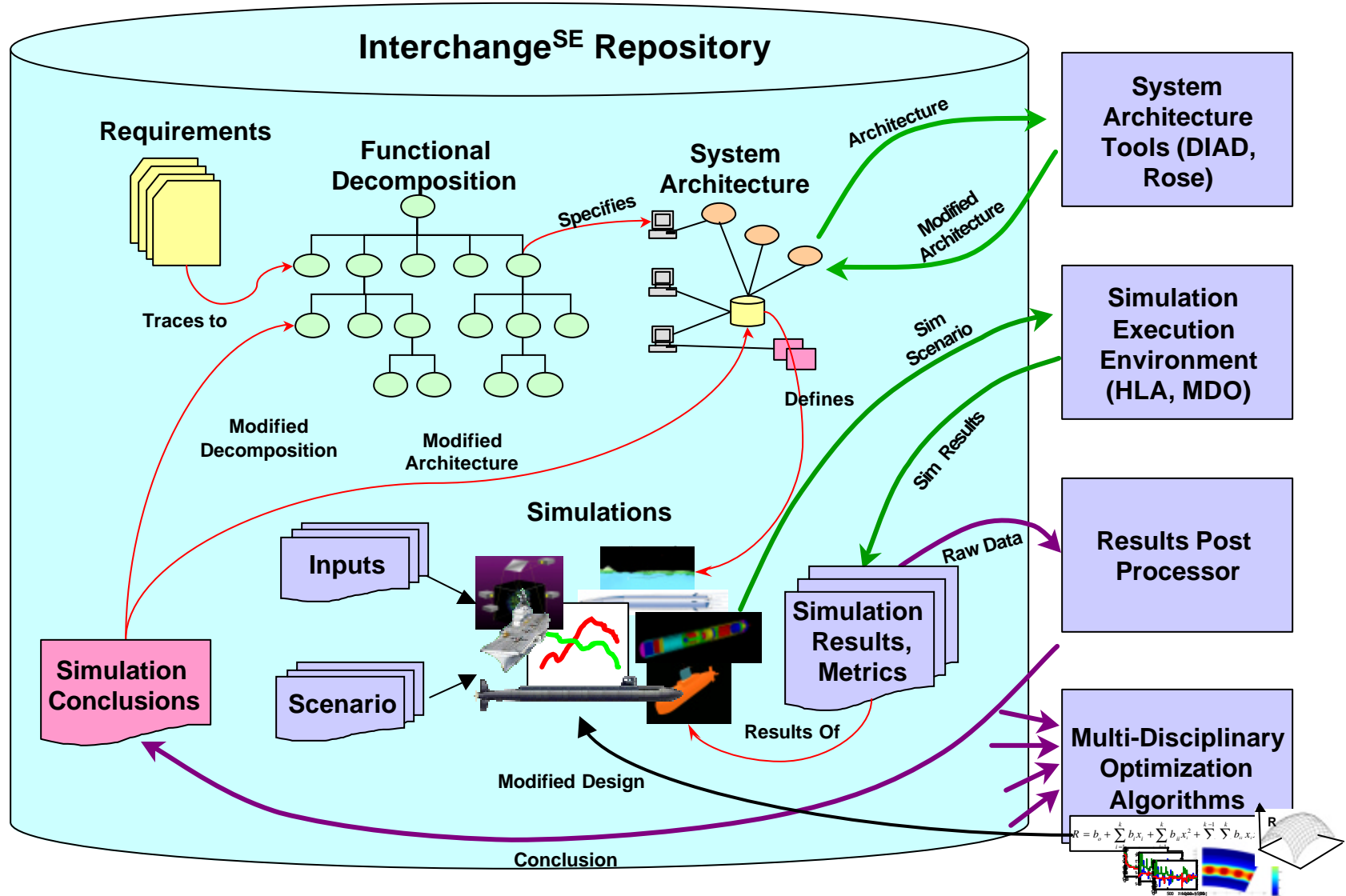
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Integrating Simulation and Analysis with Design

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Summary

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- **Modern Information Technology Provides Capabilities to Deal with System-of-Systems Complexity.**
 - Configuration Management and Control of Force Systems Architectures and Their Evolution Over Time.
 - Support for Geographically Distributed Teams Involved in Acquisition Management and Engineering Analysis.
- **Naval CEE Provides Processes, Methods and Tools to Enable an End-to-End Acquisition Process for Force Systems Integration and Interoperability.**